



2016年 保健福祉(1期) 第3問

3 $x + y = 4$, $xy = 1$ とするとき, 次の設問に答えよ.

(1) $x^2 + y^2$ の値を計算せよ.

(2) $x - y$ の値を計算せよ.

(3) $x^3 + y^3$ の値を計算せよ.

(4) $\frac{\sqrt{x} + \sqrt{y}}{\sqrt{x} - \sqrt{y}}$ の値を計算せよ.

$$\begin{aligned} (1) \quad x^2 + y^2 &= (x + y)^2 - 2xy \\ &= 4^2 - 2 \cdot 1 \\ &= \underline{14} \text{ ,,} \end{aligned}$$

$$\begin{aligned} (2) \quad (x - y)^2 &= (x + y)^2 - 4xy \\ &= 4^2 - 4 \cdot 1 \\ &= 12 \end{aligned}$$

$$\therefore x - y = \underline{\pm 2\sqrt{3}} \text{ ,,}$$

$$\begin{aligned} (3) \quad x^3 + y^3 &= (x + y)^3 - 3xy(x + y) \\ &= 4^3 - 3 \cdot 1 \cdot 4 \\ &= 64 - 12 \\ &= \underline{52} \text{ ,,} \end{aligned}$$

$$\begin{aligned} (4) \quad \frac{\sqrt{x} + \sqrt{y}}{\sqrt{x} - \sqrt{y}} &= \frac{(\sqrt{x} + \sqrt{y})^2}{(\sqrt{x} - \sqrt{y})(\sqrt{x} + \sqrt{y})} \\ &= \frac{x + y + 2\sqrt{xy}}{x - y} \\ &= \frac{4 + 2 \cdot 1}{\pm 2\sqrt{3}} \\ &= \underline{\pm \sqrt{3}} \text{ ,,} \end{aligned}$$